

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

United States Patent and Trademark  
Office  
(Box PCT)  
Crystal Plaza 2  
Washington, DC 20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

21 July 1999 (21.07.99)

International application No.

PCT/AU98/00998

Applicant's or agent's file reference

91420

International filing date (day/month/year)

27 November 1998 (27.11.98)

Priority date (day/month/year)

27 November 1997 (27.11.97)

Applicant

BENTLEY, John, David et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

24 June 1999 (24.06.99)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

S. Mafla

Telephone No.: (41-22) 338.83.38

**PCT**

**NOTIFICATION OF THE RECORDING  
OF A CHANGE**

(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

F. B. RICE & CO.  
605 Darling Street  
Balmain, NSW 2041  
AUSTRALIE

<b>Date of mailing (day/month/year)</b> 24 June 1999 (24.06.99)	
<b>Applicant's or agent's file reference</b> 91420	<b>IMPORTANT NOTIFICATION</b>
<b>International application No.</b> PCT/AU98/00998	<b>International filing date (day/month/year)</b> 27 November 1998 (27.11.98)

1. The following indications appeared on record concerning: <input checked="" type="checkbox"/> the applicant <input checked="" type="checkbox"/> the inventor <input type="checkbox"/> the agent <input type="checkbox"/> the common representative		
<b>Name and Address</b> TULLOCH, Peter, Archibald The Estate of Peter Archibald Tulloch c/o Nicholas O'Donoghue Lawyers 180 Queen Street Melbourne, VIC 3000 Australia	<b>State of Nationality</b> AU	<b>State of Residence</b> AU
	<b>Telephone No.</b>	
	<b>Facsimile No.</b>	
	<b>Teleprinter No.</b>	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning: <input checked="" type="checkbox"/> the person <input checked="" type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence		
<b>Name and Address</b> TULLOCH, Paul, Alexander Legal Representative of the Estate of Peter Archibald Tulloch (deceased) 11 Kingston Court Denmark, W.A. 6333 Australia	<b>State of Nationality</b> AU	<b>State of Residence</b> AU
	<b>Telephone No.</b>	
	<b>Facsimile No.</b>	
	<b>Teleprinter No.</b>	
3. Further observations, if necessary: <b>TULLOCH, Peter, Archibald has been recorded as deceased inventor and TULLOCH, Paul, Alexander as Legal Representative of the Estate of Peter Archibald Tulloch has been recorded as an applicant only for US.</b>		
4. A copy of this notification has been sent to: <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> the receiving Office  <input type="checkbox"/> the International Searching Authority  <input type="checkbox"/> the International Preliminary Examining Authority                         </div> <div> <input checked="" type="checkbox"/> the designated Offices concerned  <input type="checkbox"/> the elected Offices concerned  <input type="checkbox"/> other:                         </div> </div>		

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  R. Chrem  Telephone No.: (41-22) 338.83.38
--	---



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>C07K 14/705, 14/71, G06F 17/50, 19/00, 159/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/28347</b> <b>(43) International Publication Date:</b> 10 June 1999 (10.06.99)
<b>(21) International Application Number:</b> PCT/AU98/00998 <b>(22) International Filing Date:</b> 27 November 1998 (27.11.98) <b>(30) Priority Data:</b> PP 0585 27 November 1997 (27.11.97) AU PP 2598 25 March 1998 (25.03.98) AU <b>(71) Applicant (for all designated States except US):</b> COMMON-WEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION [AU/AU]; Limestone Avenue, Campbell, ACT 2601 (AU). <b>(71) Applicant (for US only):</b> TULLOCH, Paul, Alexander (legal representative for the deceased Inventor) [AU/AU]; 11 Kingston Court, Denmark, W.A. 6333 (AU). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> BENTLEY, John, David [AU/AU]; 85 Margaret Street, Macedon, VIC 3440 (AU). COSGROVE, Leah, Jane [AU/AU]; 22 Tarlton Street, Somerton Park, S.A. 5044 (AU). FRENKEL, Maurice, John [AU/AU]; 23 Ellington Street, South Caulfield, VIC 3162 (AU). GARRETT, Thomas, Peter, John [AU/AU]; 2 Gray Street, Brunswick, VIC 3055 (AU). LAWRENCE, Lynne, Jean [AU/AU]; 24 Cook Street, Brunswick, VIC 3055 (AU).		LOU, Meizhen [CN/AU]; 10 Roma Street, Scoresby, VIC 3179 (AU). LOVRECZ, George, Oscar [AU/AU]; 2 Tovey Street, North Balwyn, VIC 3104 (AU). McKERN, Neil, Moreton [AU/AU]; Como Road, Lilydale, VIC 3170 (AU). TULLOCH, Peter, Archibald (deceased). WARD, Colin, Wesley [AU/AU]; 903 Rathdowne Street, Carlton, VIC 3053 (AU). <b>(74) Agent:</b> F.B. RICE & CO.; 605 Darling Street, Balmain, NSW 2041 (AU). <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> METHOD OF DESIGNING AGONISTS AND ANTAGONISTS TO IGF RECEPTOR <b>(57) Abstract</b> <p>The present invention relates to a method of designing compounds able to bind to a molecule of the insulin receptor family and to modulate the activity mediated by the receptor based on the 3-D structure coordinates of a IGF-1 receptor crystal of Figure 1.</p>		



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification n<sup>6</sup> :</b> <b>C07K 14/705, 14/71, G06F 17/50, 19/00, 159/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/28347</b> <b>(43) International Publication Date:</b> 10 June 1999 (10.06.99)
<b>(21) International Application Number:</b> PCT/AU98/00998 <b>(22) International Filing Date:</b> 27 November 1998 (27.11.98)  <b>(30) Priority Data:</b> PP 0585                      27 November 1997 (27.11.97)    AU PP 2598                      25 March 1998 (25.03.98)        AU  <b>(71) Applicant (for all designated States except US):</b> COMMON-WEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION [AU/AU]; Limestone Avenue, Campbell, ACT 2601 (AU).  <b>(71) Applicant (for US only):</b> TULLOCH, Paul, Alexander (legal representative for the deceased Inventor) [AU/AU]; 11 Kingston Court, Denmark, W.A. 6333 (AU).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> BENTLEY, John, David [AU/AU]; 85 Margaret Street, Macedon, VIC 3440 (AU). COSGROVE, Leah, Jane [AU/AU]; 22 Tarlton Street, Somerton Park, S.A. 5044 (AU). FRENKEL, Maurice, John [AU/AU]; 23 Ellington Street, South Caulfield, VIC 3162 (AU). GARRETT, Thomas, Peter, John [AU/AU]; 2 Gray Street, Brunswick, VIC 3055 (AU). LAWRENCE, Lynne, Jean [AU/AU]; 24 Cook Street, Brunswick, VIC 3055 (AU).		LOU, Meizhen [CN/AU]; 10 Roma Street, Scoresby, VIC 3179 (AU). LOVRECZ, George, Oscar [AU/AU]; 2 Tovey Street, North Balwyn, VIC 3104 (AU). McKERN, Neil, Moreton [AU/AU]; Como Road, Lilydale, VIC 3170 (AU). TULLOCH, Peter, Archibald (deceased). WARD, Colin, Wesley [AU/AU]; 903 Rathdowne Street, Carlton, VIC 3053 (AU).  <b>(74) Agent:</b> F.B. RICE & CO.; 605 Darling Street, Balmain, NSW 2041 (AU).  <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> METHOD OF DESIGNING AGONISTS AND ANTAGONISTS TO IGF RECEPTOR  <b>(57) Abstract</b>  The present invention relates to a method of designing compounds able to bind to a molecule of the insulin receptor family and to modulate the activity mediated by the receptor based on the 3-D structure coordinates of a IGF-1 receptor crystal of Figure 1.		

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU 98/00998

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int Cl <sup>6</sup> : C07K 14/705, 14/71; G06F 17/50, 19/00, 159:00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) STN CAS-ON-LINE: keywords MEDLINE :keywords		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 90/00562 (DEMEYTS) 25 January 1990 See whole document	1-33
P,X	Protein Science, 1997, no. 6, pages 2663-2666 Mckern, NM et al. "Crystallization of the first 3 domains of the human insulin-like growth factor -I receptor See whole document	1-33
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 12 January 1999		Date of mailing of the international search report 28 JAN 1999
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer  OI LEE CHAI Telephone No.: (02) 6283 2482

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 98/00998

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Categ ry*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P.X	Nature, vol 394, published 23 July 1998, pages 395-399, Garrent TPJ et al, "Crystal Structure of the first 3 domains of the type -I insulin-like growth factor-I receptor See whole document	1-33

## INTERNATIONAL SEARCH REPORT

### Information on patent family members

International application No  
PCT/AU 98/00998

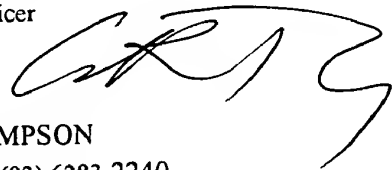
This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
WO	90/00562	AU	39822/89	DE	68927854	EP	378671
		JP	3501487	US	5227466		
END OF ANNEX							

**ATENT COOPERATION TREA**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 91420	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No.  <b>PCT/AU 98/00998</b>	International filing date (day/month/year)  27 November 1998	Priority Date (day/month/year)  27 November 1997
International Patent Classification (IPC) or national classification and IPC  <b>Int. Cl.<sup>6</sup> C07K 14/705, 14/71; G06F 17/50, 19/00, 159:00</b>		
Applicant  <b>COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION et al</b>		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <b>4</b> sheets, including this cover sheet.  <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of      sheet(s).
3. This report contains indications relating to the following items: <div style="margin-left: 20px;"> I      <input checked="" type="checkbox"/> Basis of the report  II     <input type="checkbox"/> Priority  III    <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  IV    <input type="checkbox"/> Lack of unity of invention  V      <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  VI    <input type="checkbox"/> Certain documents cited  VII    <input type="checkbox"/> Certain defects in the international application  VIII <input checked="" type="checkbox"/> Certain observations on the international application </div>	

Date of submission of the demand 24 June 1999	Date of completion of the report 22 November 1999
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer <div style="text-align: center; margin: 10px 0;">  </div> <b>GAVIN THOMPSON</b> Telephone No. (02) 6283 2240



**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed.
- ☐ the description,        pages    , as originally filed,  
                              pages    , filed with the demand,  
                              pages    , filed with the letter of    .
- ☐ the claims,        pages    , as originally filed,  
                              pages    , as amended (together with any statement) under Article 19,  
                              pages    , filed with the demand,  
                              pages    , filed with the letter of    .
- ☐ the drawings,        pages    , as originally filed,  
                              pages    , filed with the demand,  
                              pages    , filed with the letter of    .
- ☐ the sequence listing part of the description:  
                              pages    , as originally filed  
                              pages    , filed with the demand  
                              pages    , filed with the letter of    .

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language    which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description,        pages
- ☐ the claims,        Nos.
- ☐ the drawings,        sheets/fig

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims 3-12, 16-28, 31-33	YES
	Claims 1, 2, 13-15, 29, 30	NO
Inventive step (IS)	Claims 3-12, 16-28, 31-33	YES
	Claims 1, 2, 13-15, 29, 30	NO
Industrial applicability (IA)	Claims 1-33	YES
	Claims	NO

**2. Citations and explanations (Rule 70.7)**

NOVELTY (N): Claims 1, 2, 13-15, 29, 30

WO 90/00562

It discloses the method of identifying insulinomimetics as well as insulin's or IGF-1's binding to insulin receptors (page 3 lines 1-34). The IGF-1 receptor peptides include portions of the IGF-1 receptor (page 10), which corresponds to part (b) of claim 1.

Insulinomimetics can change activities mediated by the receptor peptides (page 11 lines 1-18).

INVENTIVE STEP (IS): Claims 1, 2, 13-15, 29, 30

WO 90/00562

It solves the problem of finding insulinomimetics, which fit insulin receptor domains, which is essentially the same problem as the instant problem. It would be obvious to the skilled person to adopt the aforementioned methods to solve the similar, but more formally constructed, instant problem.

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 27 is not clear as the receptor is identified as IGF-IR in all claims 21 to 26.

Claim 29 is not clear, as it is self-appended.

Claim 33 is not clear as it is incorrectly appended.